ANNUAL REPORT 2020

SHASTA MOSQUITO AND VECTOR CONTROL DISTRICT

EST. 1919

Our Mission: "To protect the public's health from vector-borne disease and nuisance, through a comprehensive mosquito and vector control program focused on innovation, experience and efficiency."

FOREWORD

Residents of the Shasta Mosquito and Vector Control District,

On behalf of the Board of Trustees and staff of the District, we are pleased to present the 2020 Annual Report for the Shasta Mosquito and Vector Control District. 2020 marks my eleventh year as the District Manager of the District and to say it was fraught with challenges would be an understatement. In 2019, we experienced snowstorms, flooding, extreme wind events, and power shutoffs; and yet, 2020 brought additional professional and personal challenges. COVID-19 shaped our year like nothing we have ever before experienced. As the global pandemic raced across the world, public health sprang into action to navigate this public health emergency. Although mosquito control was not connected to the direct response, as an essential public health service, we were left to figure out how to continue providing the same level of mosquito control amidst sometimes an everchanging environment. Due to our committed and resilient staff, we successfully maintained our programmatic mission while having to add new programs and workflows.

If the story of our 2020 season is the COVID-19 response nationally, second place goes to our local emergence of two new species of mosquito: *Aedes aegypti* and *Aedes albopictus*. How much can adding two new mosquito species to our already expansive list of 23 effect operations? It turns out, these two new mosquito species can have a **dramatic** impact on our operations and control strategy. To begin, these mosquitoes have the ability to transmit diseases that are not currently locally transmitted like Zika virus, dengue, yellow fever and chikungunya. In addition, these mosquitoes behave differently and inhabit different areas, leading to our control strategies moving to more backyard source inspections and identifying small container breeding habitats. These mosquitoes are "peridomestic," which means they prefer to live in and around human habitations, making control challenging. 2020 marks the first year we found these mosquitoes in several locations and, although we mounted an aggressive surveillance and control campaign, time will tell as to whether *Aedes aegypti* and *Aedes albopictus* will become permanent residents in Shasta county.

In closing, 2020 has taught or reminded us of many enduring lessons. One of those lessons is the immediate and sustained need for public health infrastructure and support. Each new emerging disease and disease response brings with it its unique challenges, but having trained and prepared staff can cut the learning curve and more quickly and effectively reduce human health risk. The second lesson was a reminder of the resiliency and professionalism of our District staff and public health staff as a community. Our staff and other public health professionals were faced with constantly changing and evolving issues, new restrictions to deduce, new science to digest, and true public health emergencies to overcome. Through it all, they showed dedication, determination, and an unwavering focus on protecting our community. So, I would like to extend a thank you to the public health professionals, supporters of public health and, most importantly, our District staff for working through every challenge with a smile and nod. Without your efforts and resiliency, 2020 would have seemed impossible, and due to those efforts, I'm confident that whatever new challenge 2021 might bring, we will be successful in our efforts.

Sincerely,

Peter Bonkrude

District Manager

DocuSigned by:
Benjamin L. Hanna
*

Benjamin Hanna

President

*Signed via DocuSign, in true 2020 style.

DISTRICT STAFF: ZOOM EDITION

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Education & Outreach Enthusiast

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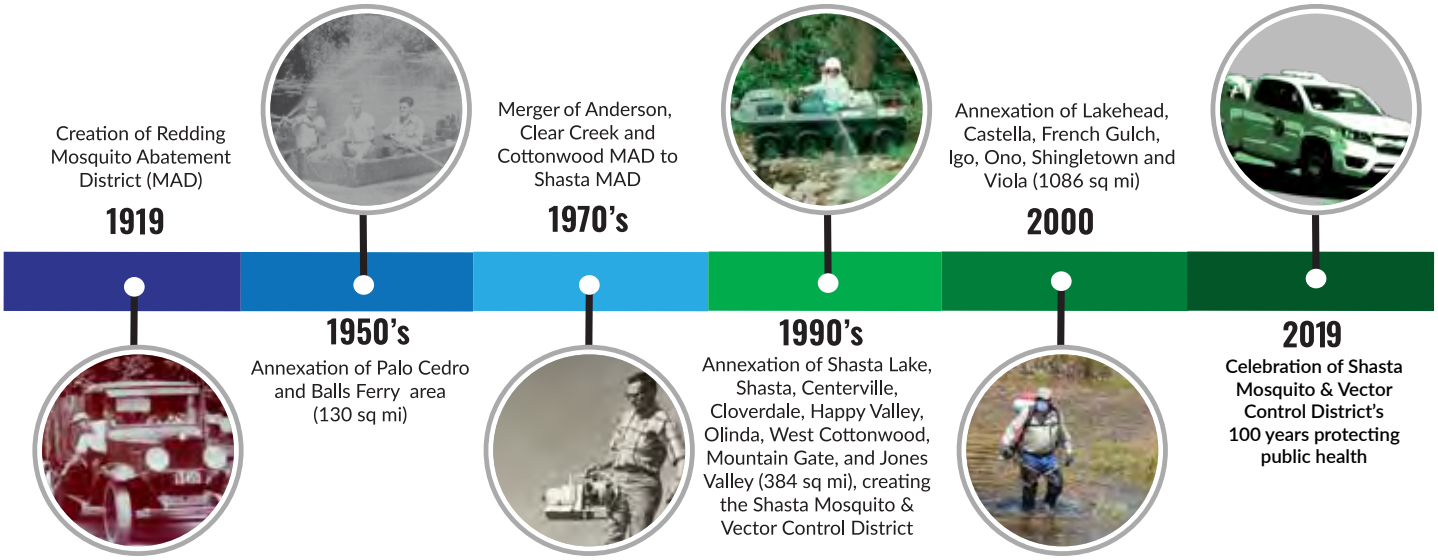
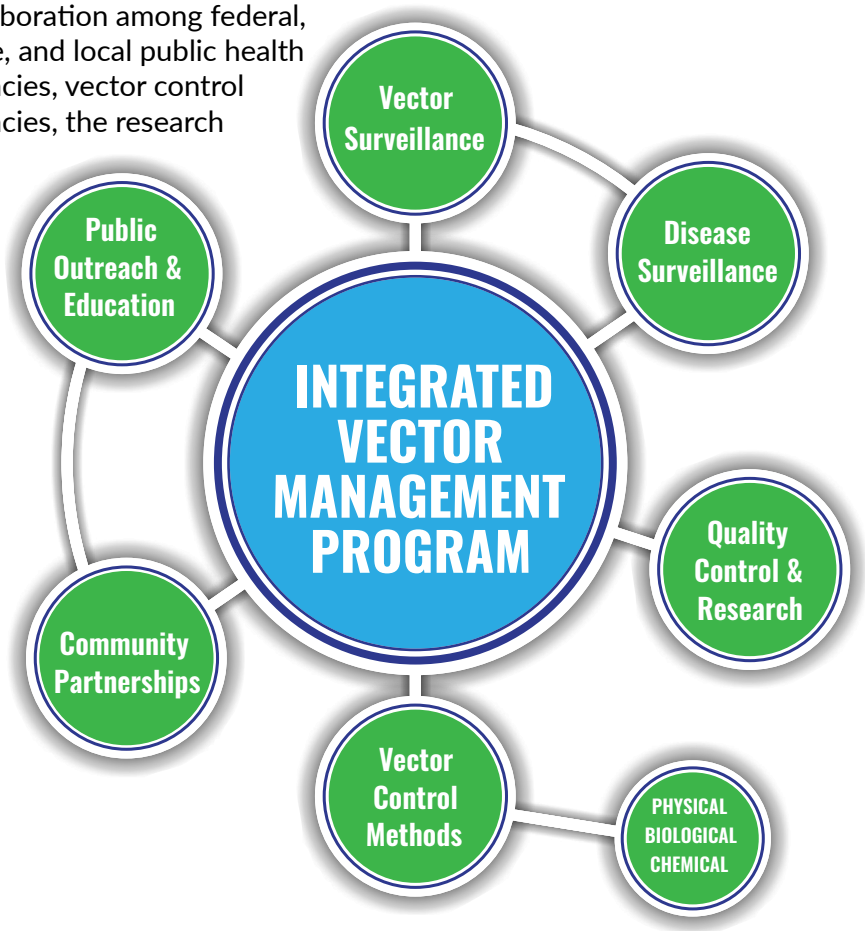
DISTRICT HISTORY

Protecting public health since 1919



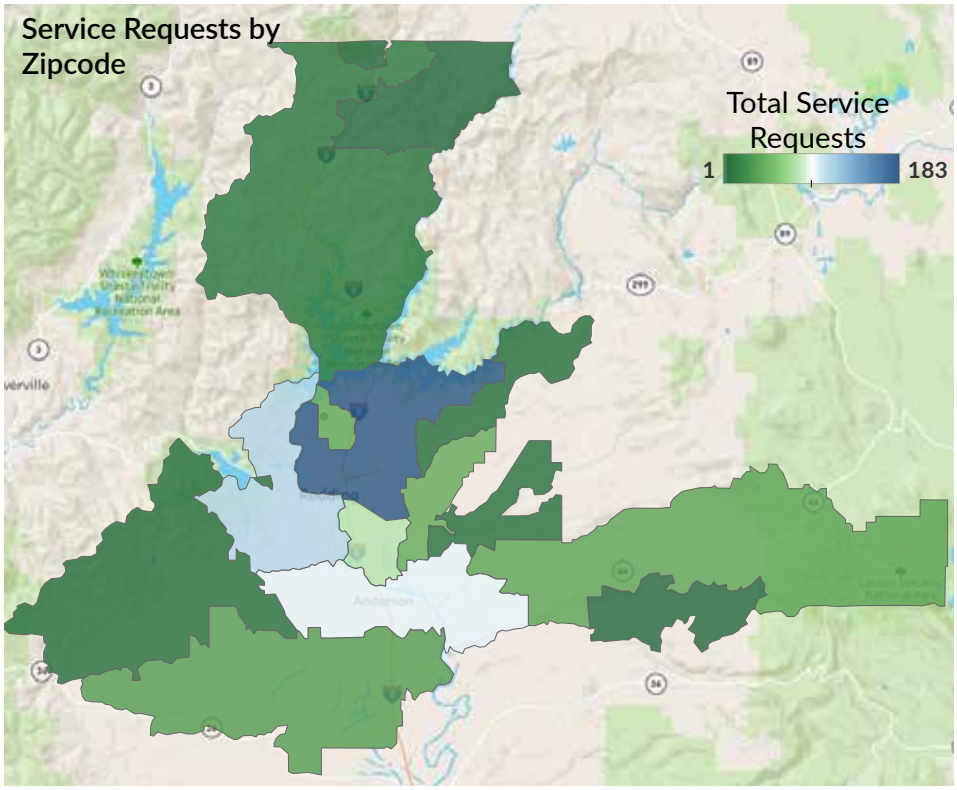
INTEGRATED VECTOR MANAGEMENT

Finding the right tool for the job is essential for an effective and efficient control operation. Modern mosquito and vector control districts like the Shasta Mosquito and Vector Control District (SMVCD), utilize Integrated Vector Management (IVM), a process that uses data, evidence, and surveillance to guide our control decisions. SMVCD defines a "vector" as a living organism that can transmit diseases between humans, or from other animals to humans. Many of these vectors are blood sucking insects and arthropods like mosquitoes, ticks, fleas, sandflies and triatomine bugs. IVM is defined as a "science-based decision-making process that seeks to improve efficacy, fiscal responsibility and ecological soundness." Put another way, to make the best decision about control, we need to first have as much information as possible. Larval and adult surveillance are the driving force behind all control decisions and without them we would be reducing our efficacy and efficiency. IVM includes: the use of vector control methods based on the scientific knowledge of local vector ecology, surveillance data, pathogen transmission risk, quality control of methods and control products, applied research, collaboration among federal, state, and local public health agencies, vector control agencies, the research community and engagement with local communities and stakeholders. We cultivate these relationships to educate, gain support, leverage resources, and change cultural practices.



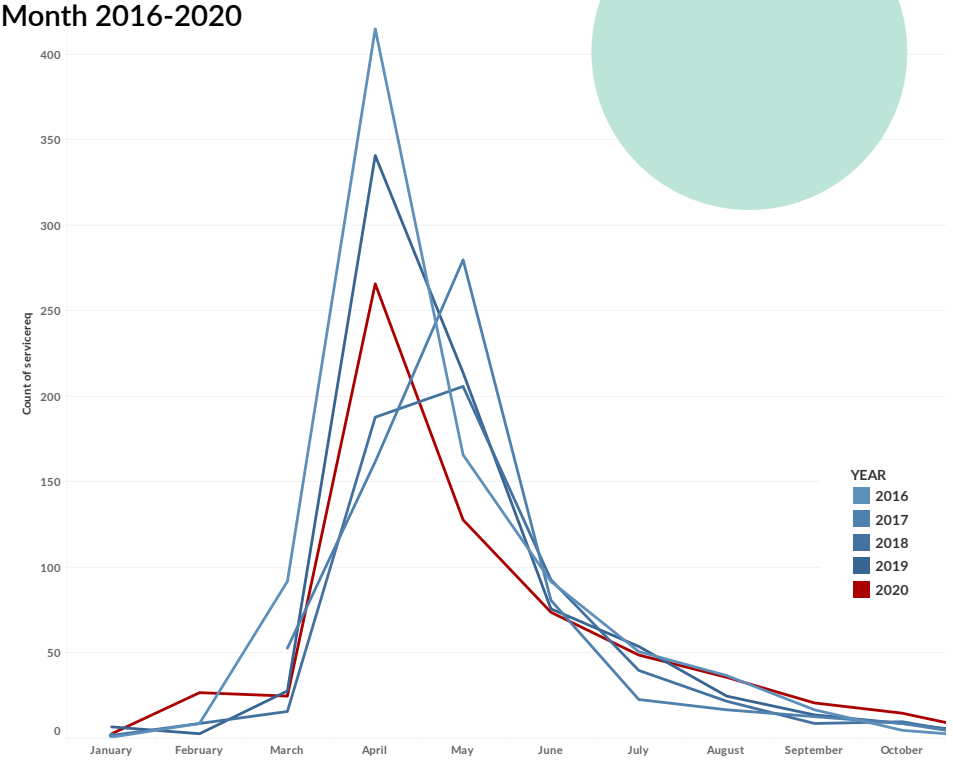
SERVICE REQUESTS

Providing quick service and information to our residents is a priority as a public agency. The interactions we have with the public provide us opportunities to hear the concerns of our residents regarding mosquito and vector control. More importantly, we can share our knowledge and experience regarding a resolution to their issue. During COVID-19, when person-to-person communication was challenging, we took pride in still maintaining high customer service standards. We continued our quick responses to requests for service. While the majority of our service requests come from residents experiencing high numbers of adult mosquitoes, we also respond to mosquitofish requests, neglected swimming pool reports and insect identification inquiries. These requests help focus our surveillance efforts and provide information essential to our IVM response. The public can issue a service request any time of the day 24/7. Using our website, they can sign up for service, gain information about current mosquito conditions, and even find out where we are performing our adult mosquito control activities.



Service Requests by Issue Reported

Service Requests by Month 2016-2020



Service Requests by Community

Castella	1
Shasta	4
Bella Vista	5
Igo & Ono	5
Millville	6
Lakehead	11
Cottonwood	32
Shingletown	37
Palo Cedro	40
City of Shasta Lake	42
Anderson	96
Redding	368
Grand Total	647

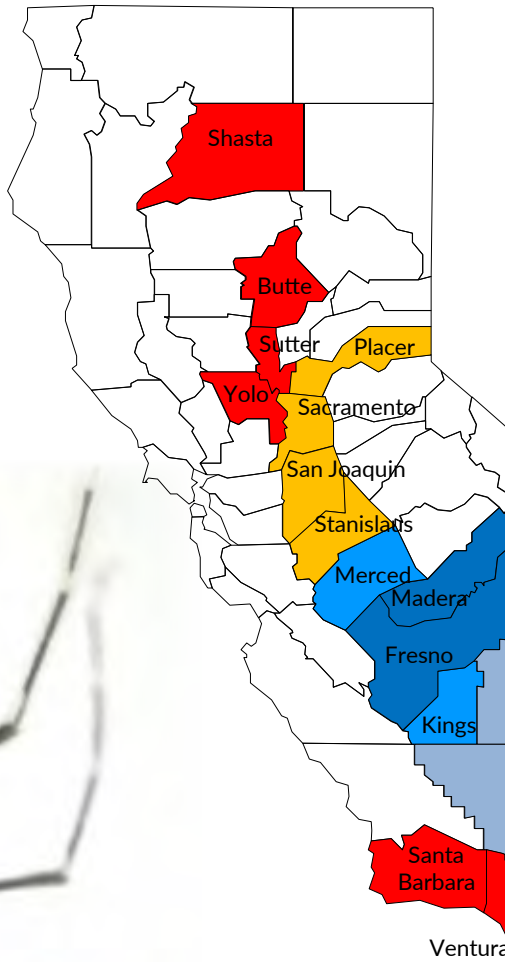
Aedes aegypti Det 2013

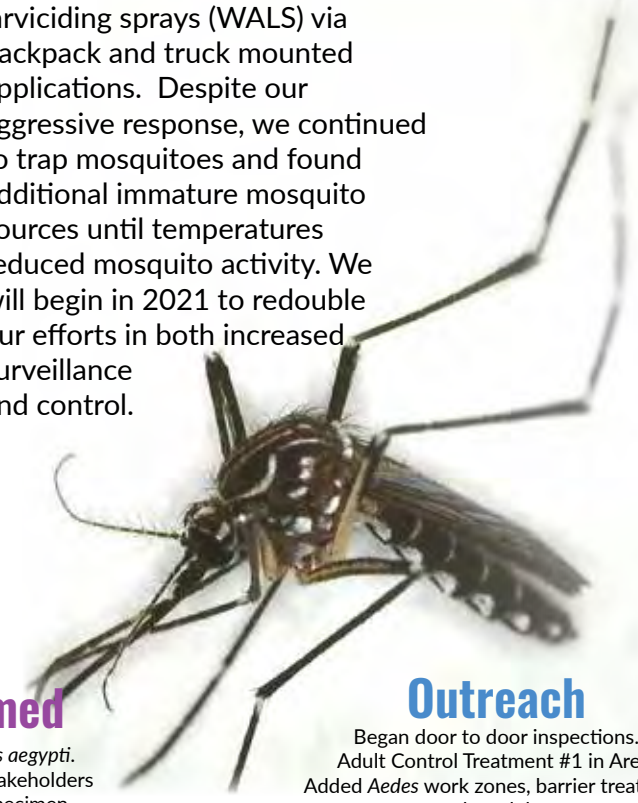
INVASIVE AEDES ARRIVAL

As the 2020 season progressed, and we began navigating our "normal" mosquito control operations we were unfortunately faced with another new challenge. Two new mosquito species, *Aedes aegypti* and *Aedes albopictus*, were identified during the District's normal mosquito surveillance. *Aedes aegypti* (the yellow fever mosquito) was found for the first time as an adult in our boundaries on August 14th, 2020. *Aedes aegypti* has the ability to transmit diseases like Zika virus, dengue, yellow fever and chikungunya.

Once identified, District staff increased both surveillance in the area for adult mosquitoes and door-to-door inspections looking for immature mosquito habitat. Staff continued to find small containers with standing water that contained larval *Aedes aegypti* mosquitoes. A few days later *Aedes albopictus* (the Asian Tiger Mosquito) was also identified in both their immature and adult forms. As our surveillance was increasing in scope and scale, staff also began control efforts.

These efforts included educating the residents located near the mosquitoes, looking for common, species-specific habitats, and informing the public for ongoing sanitation efforts. We performed "barrier" treatments targeted at vegetated areas where adult mosquitoes may be resting, conducted ultra-low volume adult mosquito control applications, placed autocidal In2Care traps, and applied several wide area larviciding sprays (WALS) via backpack and truck mounted applications. Despite our aggressive response, we continued to trap mosquitoes and found additional immature mosquito sources until temperatures reduced mosquito activity. We will begin in 2021 to redouble our efforts in both increased surveillance and control.





August 14, 2020

Aegypti Find #1
Received word from the lab about probable *Aedes aegypti* in a Gravid trap found near Buckeye.

August 15, 2020

Confirmed
Confirmed *Aedes aegypti*.
Began notifying stakeholders regarding the specimen

August 16, 2020

Survey
Drafted an invasive *Aedes* work plan: Surveillance, Control, Logistics.
Drafted the Press Release for the invasive mosquito.

August 17, 2020

Outreach
Began door to door inspections.
Adult Control Treatment #1 in Area.
Added *Aedes* work zones, barrier treatment area, new aedes adult spray route.

August 18, 2020

Larval Treatment
Barrier Treatment conducted.
Adult Control Treatment #2 in Area.

Adult Tr
Adult control trea

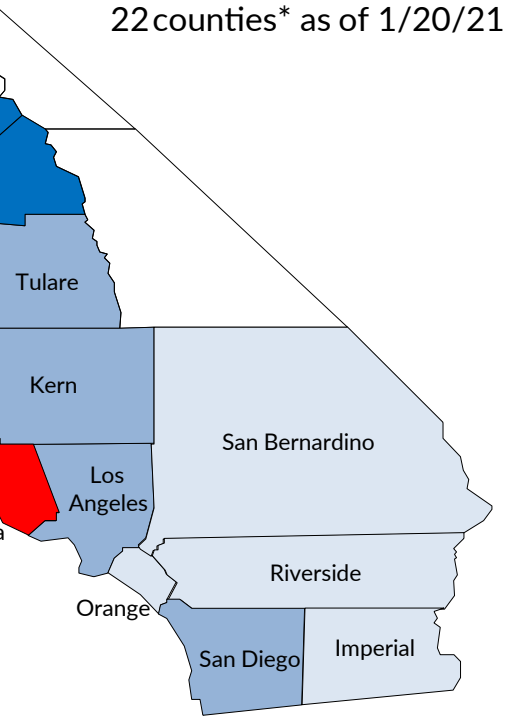
August

ections by County - 2020

Year of first detection

- 2013
- 2014
- 2015
- 2017
- 2019
- 2020

22 counties* as of 1/20/21



Staff performing a WALS treatment for invasive mosquitoes in their larval phase.

Staff setting an In2Care trap near foliage and potential sources.

Staff finding *Aedes aegypti* in bamboo plant water during a door-to-door inspection.

eatment

tment #3 in Area.

19, 2020

Adult Albopictus Find

A second invasive *Aedes* mosquito, *Aedes albopictus*, was found in a BG Sentinel trap on Lake Blvd within the same Area.

August 25, 2020

Aegypti Find #3

Aedes aegypti adult mosquito was found in a CDC-AGO trap near Park Marina, a third different Area.

September 21, 2020

September 22, 2020

August 21, 2020

Larval Albopictus Find

Aedes albopictus larvae were found in a water sample within the same Area.

September 15, 2020

Aegypti Find #2

Aedes aegypti adult mosquito was found in an EVS trap near South Churn Creek, an entirely different Area.

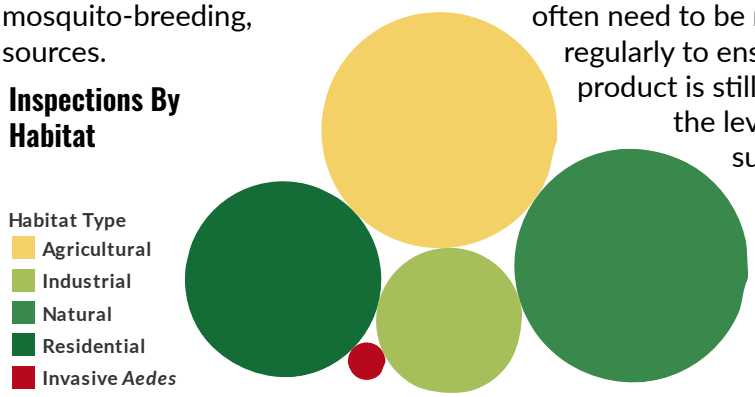
Aegypti Find #4

Aedes aegypti adult mosquito was found in a BG Sentinel trap near Hwy 273, a fourth different Area.

IMMATURE MOSQUITO CONTROL

The most efficient way to control adult mosquitoes is by preventing them from reaching adulthood. Much of our time is spent inspecting and treating the standing water sources that breed mosquitoes. We have mapped over 16,000 potential breeding habitats that are inspected regularly and, if found, immature (larva and pupa stage) mosquitoes are treated. District staff have several tools in the IVM tool chest to control these immature mosquitoes before they emerge, including: biological control, chemical control, and physical control. Following IVM, we choose the control tool(s), depending on the target species, time of year, and habitat, to have the most effective control. This year, our staff made almost 17,000 inspections of potential mosquito-breeding, sources.

Inspections By Habitat



CHEMICAL MOSQUITO CONTROL

Chemical control of immature mosquitoes includes the use of products, called larvicides, that help reduce mosquito populations in the water before they emerge as adults. These larvicides are often very specific in targeting mosquitoes and not other aquatic insects or other animals. These controls are categorized into the following categories: microbial products, insect growth regulators, surface oils, and toxins derived from bacteria. In 2020, staff made over 4,000 applications to water containing immature mosquitoes and used over 30 different products and formulations. Treatments can be for sources of less than a few ounces of water, up to multiple acres of mosquito producing habitat. Sources treated with chemical control products often need to be re-inspected regularly to ensure the product is still producing the level of control sufficient to prevent emerging adults.

PHYSICAL MOSQUITO CONTROL

Physical control means manipulating the habitats where immature mosquitoes live to eliminate or reduce further breeding. Physical control is an important vector control strategy of IVM. It has a long-term effect on reducing mosquito populations. With effective physical control, chemical control use is greatly reduced. Physical control practices include hand brushing, ditch cleaning, controlled burning of debris piles, and herbiciding. These methods reduce larval mosquito sources and adult mosquito habitats and provide access for inspecting mosquito sources, larviciding and adulticiding.

In 2020, our staff made the following physical control efforts:

- 24 man-hours of heavy equipment work to repair and clean ditches
- 455 man-hours of brushing including cutting and burning at 35 sites
- 1,056 acres of herbiciding at 60 sites


Mosquito larvae and pupae developing into adults.

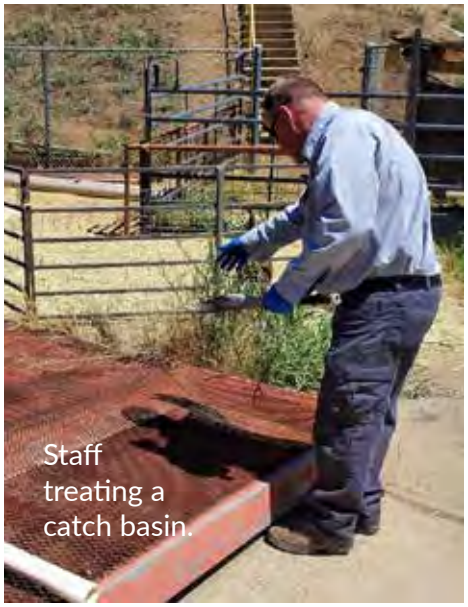

Staff treating vernal pools.


Staff removing brush.

An adult female mosquitofish zoning in on a mosquito larva in an observation tank.

BIOLOGICAL MOSQUITO CONTROL

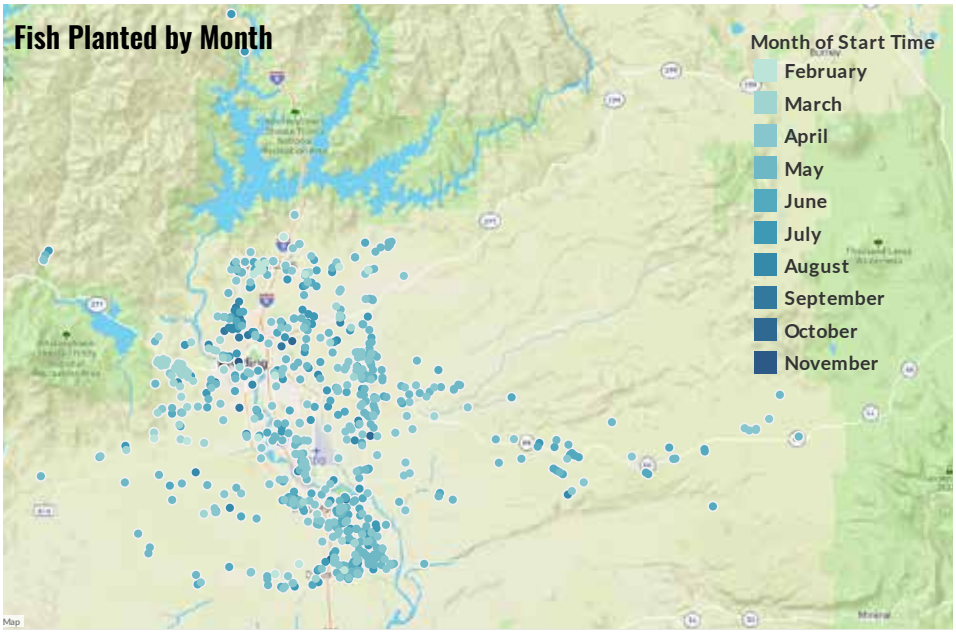
Biological control is the use of other organisms that prey on, parasitize, compete with, or otherwise reduce mosquito populations. Biological control can be accomplished utilizing three broad categories: conservation, augmentation, and classical biological control. The District promotes conservation biological control by encouraging natural predators in habitats where they are established. By only choosing control products that will select for mosquitoes we can prevent reduction of other aquatic predators that help reduce mosquito populations. For augmentative control, the District continues to seek natural predators that can be released seasonally in large enough numbers to effect mosquito populations. Currently the most effective biological control category used is classical biological control, which takes a non-native species and introduces it to control a pest. Our District uses the mosquitofish, *Gambusia affinis*, which effectively preys on mosquito larvae and pupae when released into mosquito breeding water bodies. Unfortunately, because they are not naturally found in our area, we are limited as to where they are appropriate to be used. This year, the District released mosquitofish to 913 confined water bodies. Mosquitofish can survive in various water qualities and reproduce quickly within short periods of time. Residents can contact the District to request a mosquitofish delivery. The mosquitofish are free to District residents.



Staff treating a catch basin.

CATCH BASINS

Catch basins are sumps located directly under storm drains that can hold standing water and allow mosquito breeding. There are more than 10,000 catch basins in our District. During the summer, the staff spent more than 600 manhours inspecting all the catch basins. More than 1,000 of them held water and required treatment. After, staff conducted follow-up inspections of the catch basins that were either previously treated or in areas of special concern.

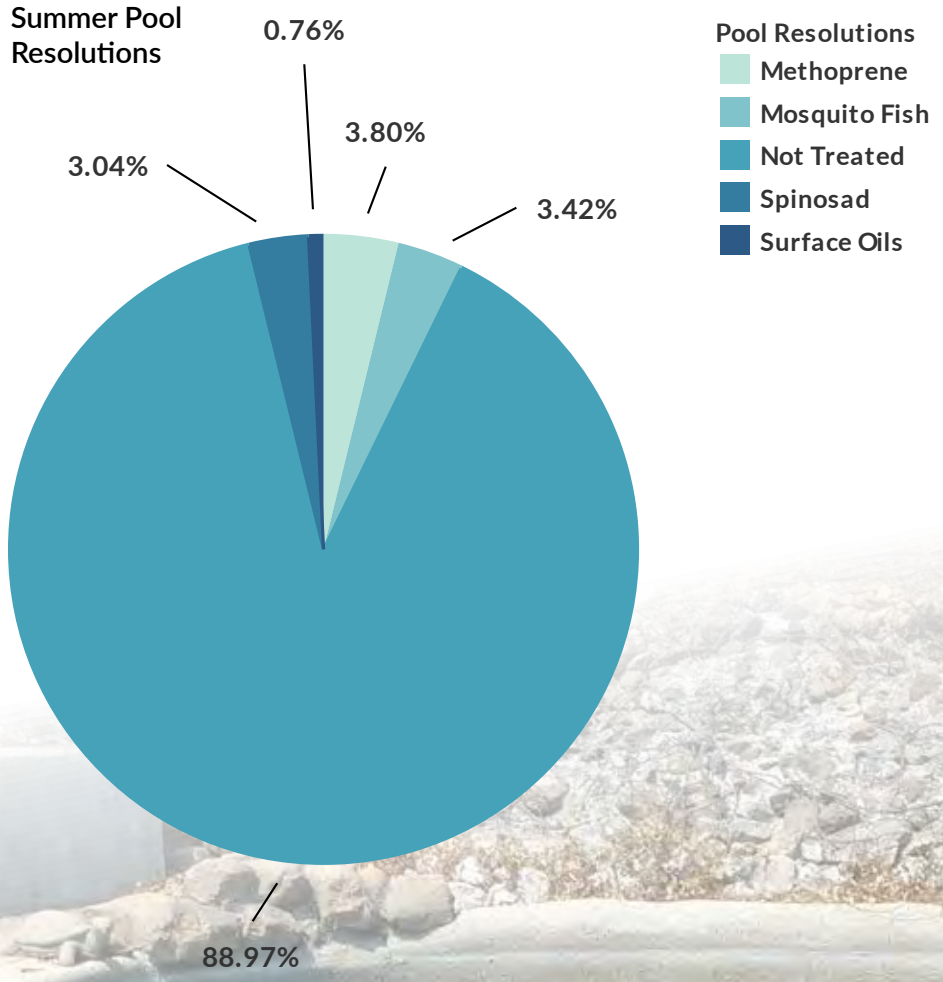


District staff checking a catch basin for mosquito activity.

SWIMMING POOLS

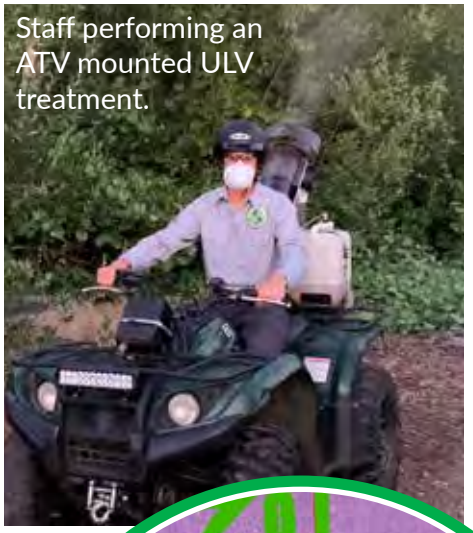
When a swimming pool is not maintained, it poses a serious public health threat to the community. The large volume of standing water in the pool is perfect for breeding mosquitoes, which can transmit life-threatening viruses such as Zika, dengue, and West Nile virus. Our District identifies unmaintained swimming pools by reports from the residents, inspections from our technicians, and aerial imagary. Each year, we inspect more than 1,000 pools and treat those found with mosquito breeding activity. During the winter and early spring of 2020, the staff inspected 138 neglected swimming pools as follow-ups to fish releases and chemical control treatments in the previous season. Of the 138 pools, a total of 6 pools were warranted for access due to either the property being vacant, or the property owner being uncooperative in providing access to the pool.

Staff treating a neglected swimming pool.



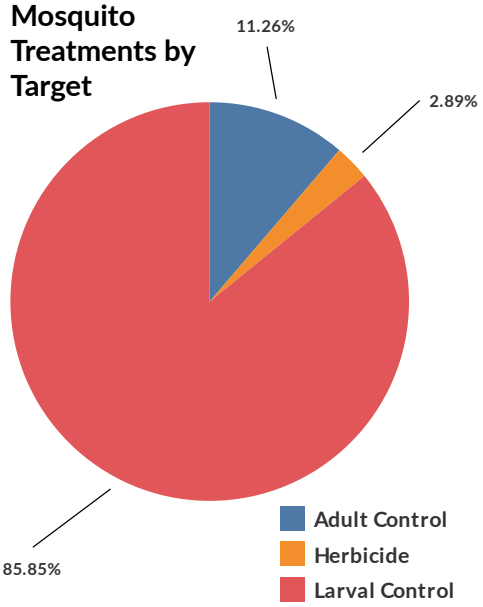
ADULT MOSQUITO CONTROL

Adult mosquito control, referred to as adulticiding, is the practice of controlling adult mosquitoes by applying chemical products. Controlling adult mosquitoes is an integral component of a comprehensive IVM program. These applications can immediately reduce the number of biting mosquitoes in an area, thereby reducing the risk of a mosquito-borne disease outbreak. This becomes essential when adult mosquito numbers become high enough to quickly transmit and spread diseases, or severely reduce the well-being of our residents. Although adult mosquito control has its limitations, it is the only way to interrupt active mosquito disease transmission when it is occurring. These limitations require the District to couple this intervention with several other tools, including an aggressive immature mosquito control program and increasing our community engagement regarding personal bite prevention. No special precautions are required for our residents during these applications because of the low application rates, typically less than 3 ounces per acre. Additionally, the size of the droplet, the time of the application (dusk/dawn), and the knowledge of critical habitats mitigate any non-target impacts. Our applications are made dynamically, in response to our adult mosquito surveillance. This could mean applications are made the same night or next day as the trap data is processed. This level of responsiveness ensures we can move fast enough to prevent human disease. This year, District staff completed 549 adulticiding routes and treated over 98,000 acres. Residents can visit our website: www.shastamosquito.org to review where and when our adult mosquito application will be conducted, or to subscribe to our spray notification list.



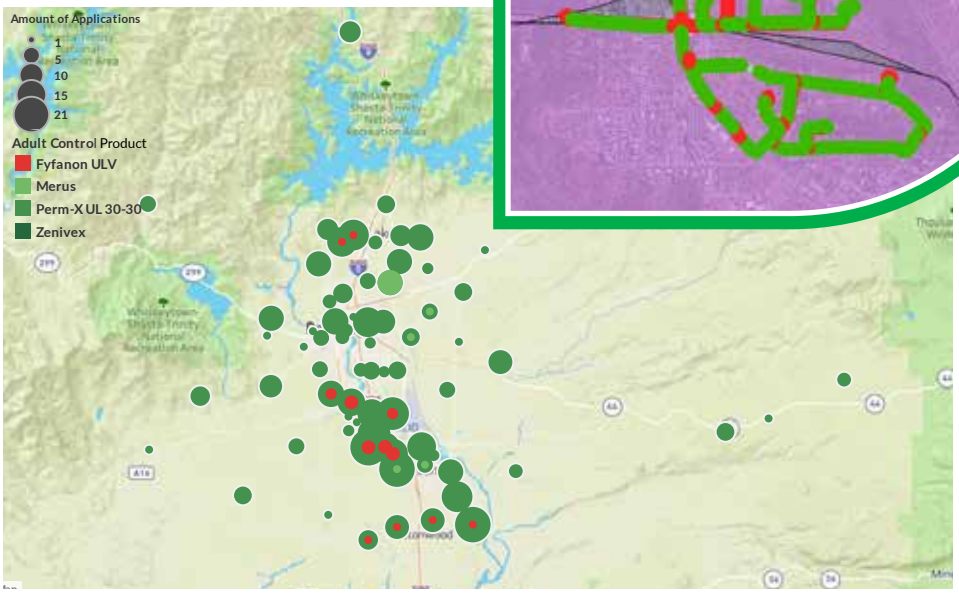
Staff performing an ATV mounted ULV treatment.

Mosquito Treatments by Target



Map of a truck mounted ULV treatment for adult mosquito control.

Map of Adult Mosquito Control Routes



Staff performing a truck mounted ULV treatment.

RESEARCH & DEVELOPMENT

Shasta MVCD makes an effort to continually improve upon control activities to find the most effective and efficient control methods. In our niche industry, technologies and products are constantly needing to be researched, tested, and adapted to meet our unique needs in our integrated vector management approach.

3D PRINTING INNOVATION

Mosquito surveillance is a highly specialized activity requiring biological knowledge and specialized equipment that is often not found ready-made and commercially available. The District has a 3D printer and trapping annex outside of the lab space to facilitate development, storage, modification, repair and maintenance of the best possible surveillance tools for the District's local environment and mosquito species.

Golden Missy trophies were 3D printed for our state association, MVCAC.

Items circled in the trap annex were some of the many 3D prints of 2020.

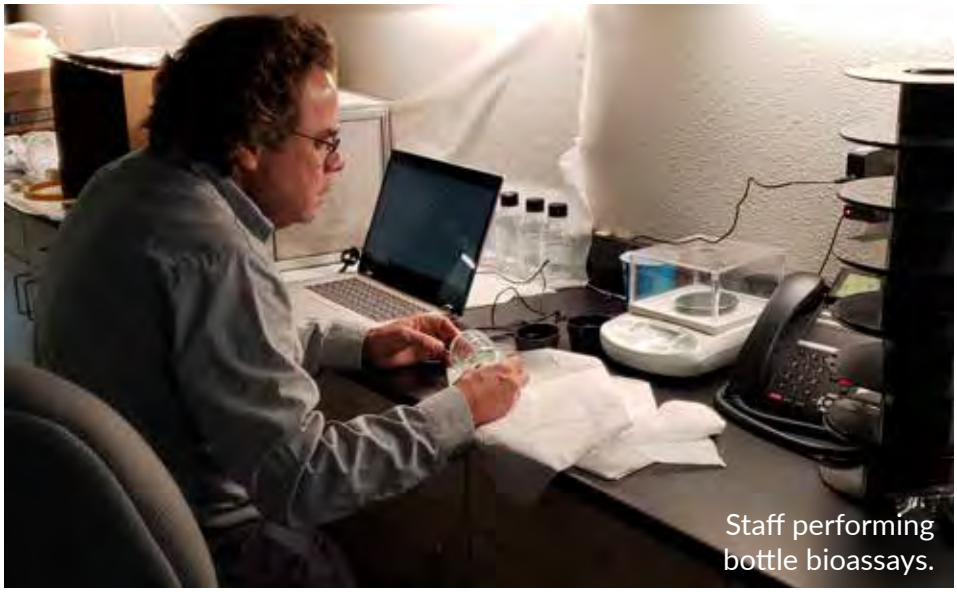
CACHE VALLEY SURVEILLANCE

Cache Valley virus is mosquito-borne and causes outbreaks of congenital malformations and death in sheep, goats, and cattle. It can cause encephalitis in humans in rare cases. An occurrence of Cache Valley virus in sheep was reported 7 years ago. For the last three years, the District conducted surveillance on mosquitoes utilizing EVS traps, resting units, and aspiration of the adults seeking shelter in protected structures in Oak Run, Millville, and Palo Cedro areas. Mosquito samples collected have been sent for testing the presence of Cache Valley virus at the UC Davis DART (Davis Arbovirus Research and Training) Laboratory. Results are pending.

Staff aspirating mosquitoes to test for Cache Valley virus.

BOTTLE BIOASSAYS

The District tests local adult mosquitoes for pesticide resistance by placing them in bottles with precisely measured amounts of active ingredients and observing their rate of mortality compared to lab-reared susceptible mosquitoes. In 2020, three pesticides were tested on mosquitoes from two different locations in July. The amount of tolerance to mosquito control products detected in local mosquitoes is similar to observations made in previous years.



Staff performing bottle bioassays.

DATA COLLECTION

As an IVM-guided mosquito control district, data drives every decision that is made at our agency. For the last 9 years we accomplished our data collection and reporting through a robust system that connected all departments and ensured shared communication and information. This system, called MOS, was a map-based, custom-designed software solution. As we moved into 2019 and then 2020, it was apparent a new solution was required. We partnered with software developers in 2019 and began adapting their existing platform for our needs. The goals of the project included: easy scalability, ability to add programs without developers, seamless function whether connected to the internet or not, map-based, and free of licensing commitments. In March of 2020, we began utilizing both systems in parallel to ensure no data loss. Then, in August we completed a hardware refresh cycle for all field machines and officially rolled out the new software.

Screenshot of the new software.

LARVICIDE EFFICACY

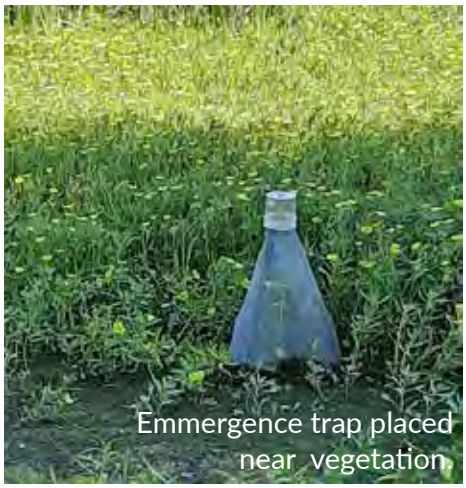
Staff also conducted efficacy tests of a larviciding product containing pyriproxyfen on *Culex* mosquitoes. The preliminary results showed the product lasted as long as 115 days in one of the treated catch basins.

CQ PERTURBANS SEARCH

Coquillettidia perturbans are often abundant as adults and easily drawn to mosquito traps, yet the larvae of this species are elusive. The immature mosquitoes have a unique adaptation that allows them to remain submerged until they are ready to emerge as adults. Rather than using a straw like siphon to breathe on the water's surface, these larvae get oxygen from aquatic vegetation by using a modified siphon to pierce and anchor to the plant.

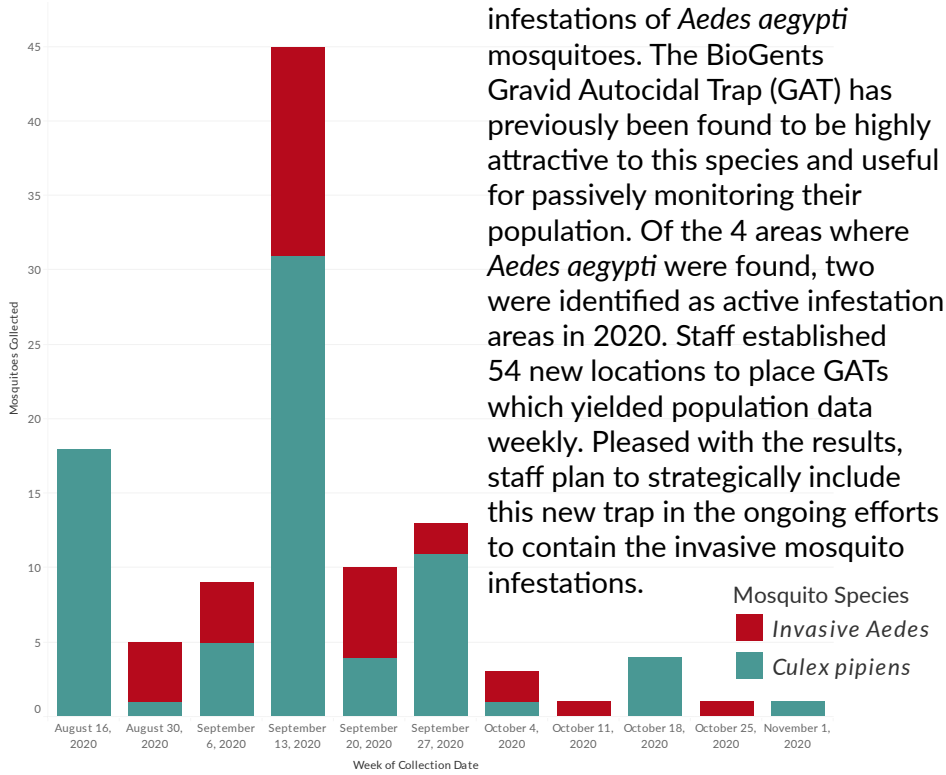
Staff experimented with methods to identify areas where *Cq perturbans* larvae develop. The primary method was to place a conical emergence container in aquatic vegetation in an attempt to capture newly emerged adults. The second involved staff sorting through vegetation samples and using a standard dipper to scrape the vegetation.

Staff isolated 16 larvae from the vegetation samples which were stored for future reference.



Emmergence trap placed near vegetation.

NOVEL TRAPPING



Lab staff employed novel traps to assess the newly discovered infestations of *Aedes aegypti* mosquitoes. The BioGents Gravid Autocidal Trap (GAT) has previously been found to be highly attractive to this species and useful for passively monitoring their population. Of the 4 areas where *Aedes aegypti* were found, two were identified as active infestation areas in 2020. Staff established 54 new locations to place GATs which yielded population data weekly. Pleased with the results, staff plan to strategically include this new trap in the ongoing efforts to contain the invasive mosquito infestations.

TICK SURVEILLANCE

Adult ticks find hosts to feed on by climbing to the tops of high grass and other low vegetation and hanging on by their hindlegs with their forelegs extended. This behavior is known as questing. District personnel capture questing ticks by using a large cloth "flag" dragged along trails.

Shasta Mosquito and Vector Control District collects adult ticks throughout the District in locations where these vectors have a high probability of transmitting diseases carried by wildlife to humans by blood-feeding activity. The District collected ticks on a weekly basis at 22 sites from November 2019 through March 2020. Tick numbers were generally below seasonal averages during the 2019 – 2020 season, which had few periods of prolonged precipitation.

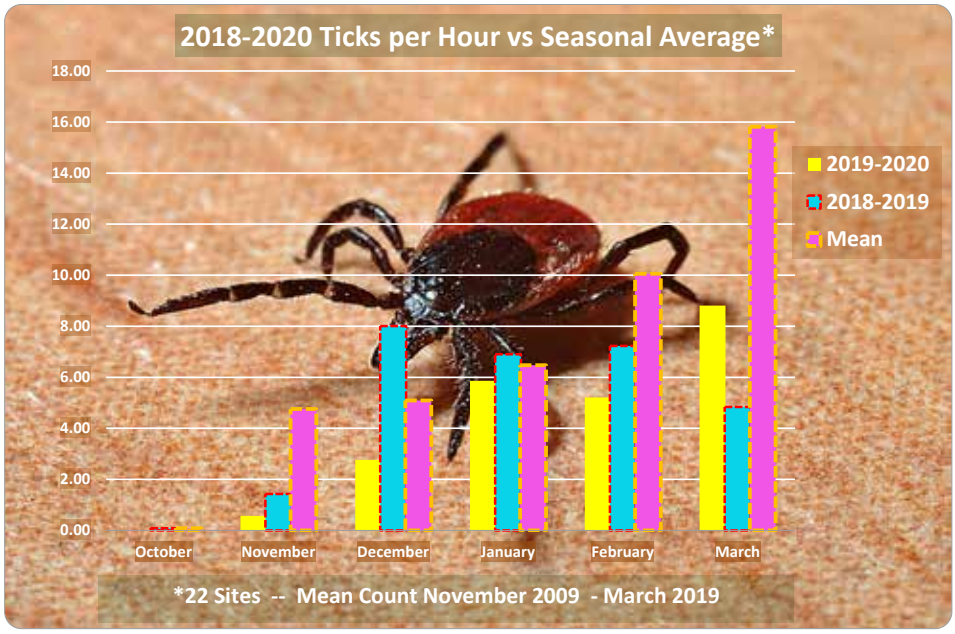
Samples of *Ixodes pacificus* ticks were submitted to Placer County MVCD to be tested for the presence of *Borrelia burgdorferi*, the causative agent for Lyme disease, and *Borrelia miyamotoi*, a bacterium that causes a relapsing fever disease. In the 2019 – 2020 season 240 samples (1,075 total ticks) were tested by RTPCR. One sample was positive for *Borrelia burgdorferi* and 12 were positive for *Borrelia miyamotoi* indicating infection rates of 0.09% and 1.12% respectively for the two types of bacteria among our *Ixodes pacificus* ticks.

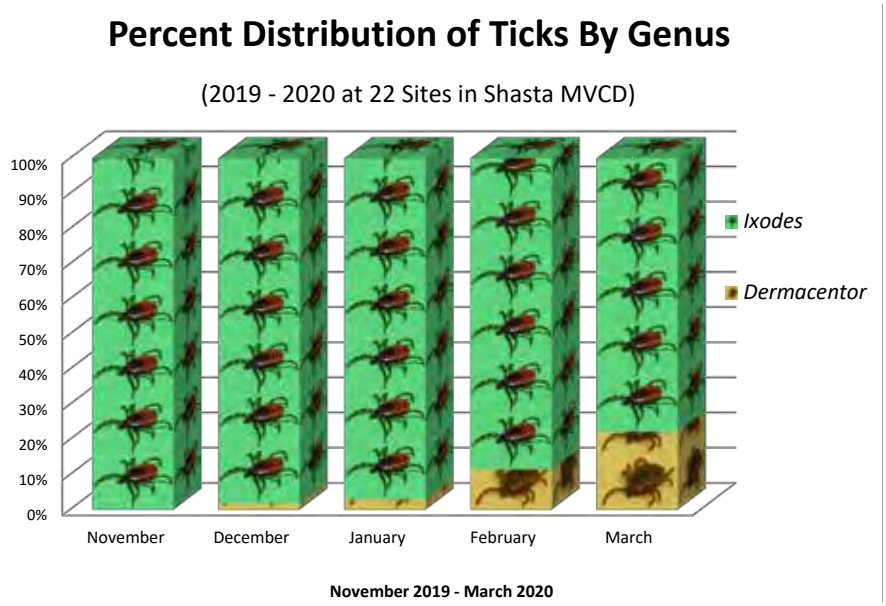
Shasta Mosquito and Vector Control District personnel collect mostly three types of adult ticks within the district. I*xodes pacificus*, the western black-legged deer tick, can spread Lyme disease. Two different *Dermacentor spp*. ticks, which are more heat tolerant, are frequently encountered by District personnel in moist riparian areas with dense, low vegetation well into the summer. These ticks are not known to transmit diseases to humans in this general area of the U.S.

5.42% TICK SAMPLES TESTED POSITIVE FOR TICK-BORNE DISEASES

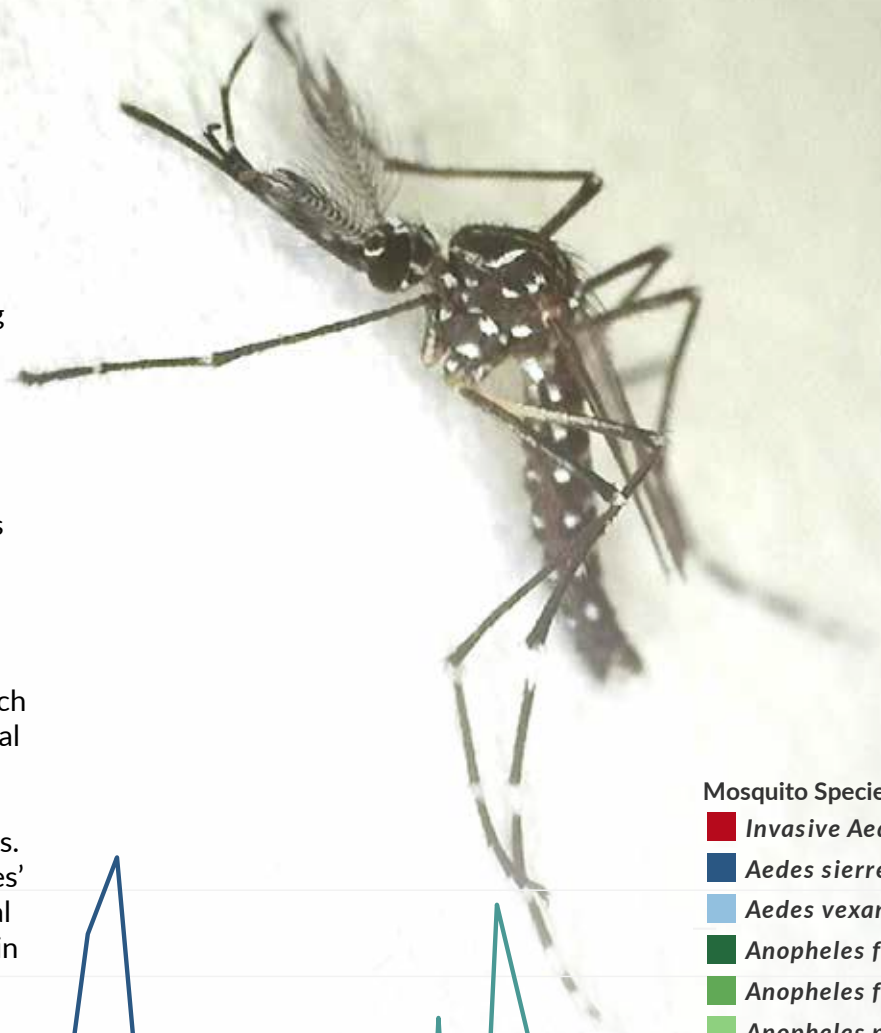
Ixodes

Dermacentor





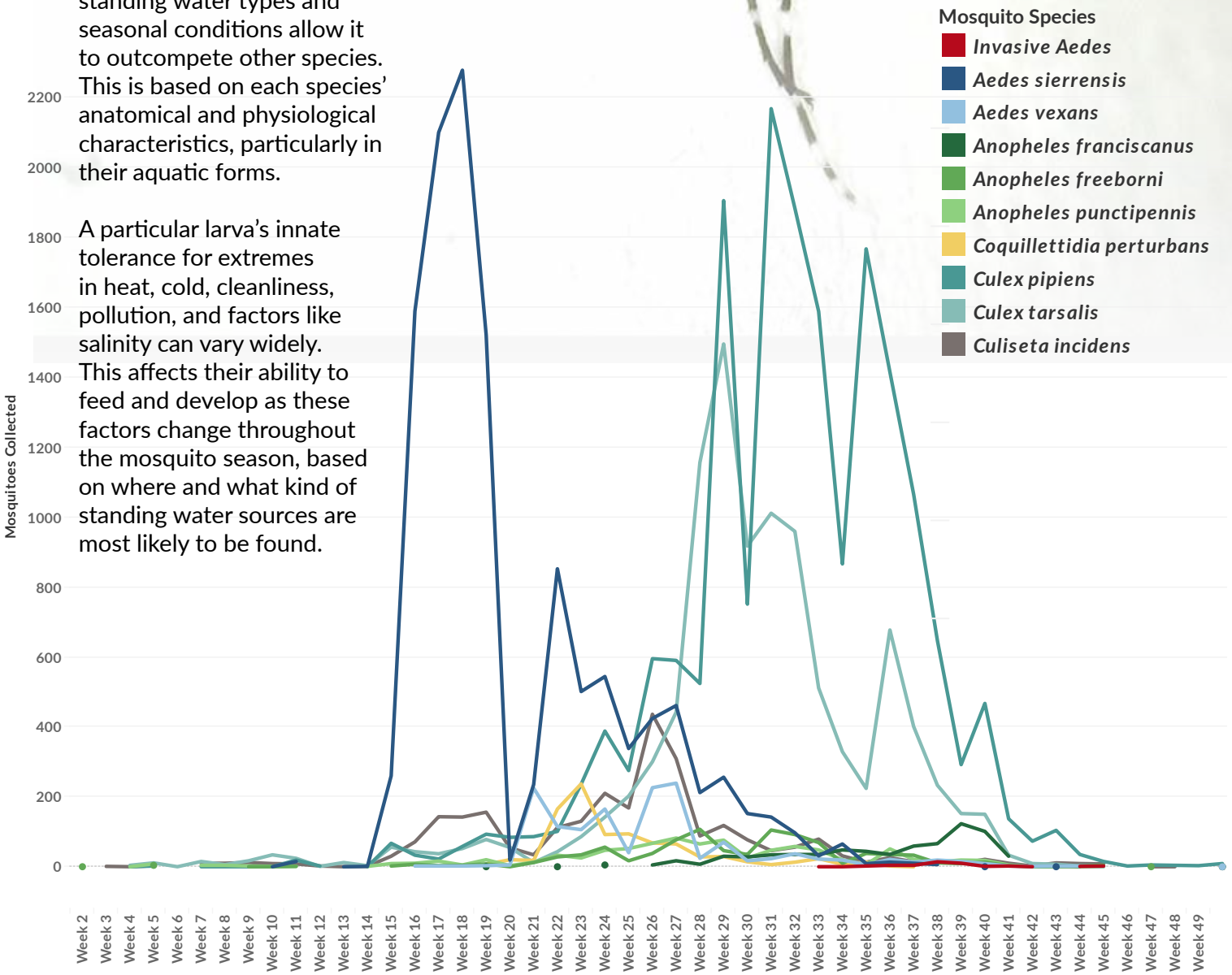
MOSQUITO SURVEILLANCE



Adult mosquito collection via trapping is an essential part of both population and disease surveillance. Sorting mosquitoes by species and sex generates population data which guides control decisions.

Twenty-six different species of mosquitoes, including invasive *Aedes spp.*, are known to exist within the District, though some types are not frequently seen. Each has its own niche where local standing water types and seasonal conditions allow it to outcompete other species. This is based on each species' anatomical and physiological characteristics, particularly in their aquatic forms.

A particular larva's innate tolerance for extremes in heat, cold, cleanliness, pollution, and factors like salinity can vary widely. This affects their ability to feed and develop as these factors change throughout the mosquito season, based on where and what kind of standing water sources are most likely to be found.



LOCAL DISEASE SURVEILLANCE

Mosquito population data and disease indicators are two guiding factors for vector control. Mosquito samples, sentinel chicken blood samples and dead bird saliva samples are all collected by District staff to monitor disease transmission. Additionally, the District receives limited data on mosquito-borne illness when humans or horses are infected. A positive sample from any of these sources prompts swift response from the District.

Evidence of West Nile virus (WNV) was detected in 25 mosquito samples, 3 sentinel chickens, and 2 humans. This was the most active year for WNV activity in our District since 2015. This followed 2019, which had the lowest level of WNV detection since 2011 within the District. This shows the unpredictable nature of this disease and emphasizes the need for constant vigilance by the District regarding WNV presence.

DEAD BIRD REPORTS

Crows, jays and magpies all belong to the Corvid family. These birds are especially susceptible to West Nile virus, and infection is often fatal. When discovered, the public reports dead birds which District staff then retrieve and sample for WNV. Only 1 dead bird was tested in the District in 2020, but it was negative for WNV.

DISTRICT-WIDE WNV+ INDICATORS 2020

District-wide Positive WNV Indicators 2015-2020

	2015	2016	2017	2018	2019	**2020**
Human Cases	2	1	1	1	0	**2**
Horses	2	1	0	1	0	**0**
Dead Birds	15	3	2	5	1	**0**
Mosquito Samples	48	12	0	8	3	**25**
Sentinel Chickens	18	3	4	4	1	**3**
Total Indicators	**81**	**20**	**7**	**19**	5	**30**

HUMANS & HORSES

Human and horse cases are reported to the District by public health and/or veterinary professionals. In 2020, unfortunately, there were 2 local human cases of WNV and 1 resulted in a fatality.

MOSQUITO SAMPLES

Some mosquito species are sampled for the presence of viruses. These sample results aid District staff to make informed decisions regarding mosquito control. The District submitted 690 mosquito samples totaling 21,870 *Culex spp*. mosquitoes. WNV positive mosquitoes were detected in 25 samples in 2020.

SENTINEL CHICKENS

Sentinel chickens were one of the first virus surveillance tools used by mosquito districts. They are still used to detect virus transmission, and are an important part of surveillance. The District has 4 sentinel chicken flocks, totaling 32 birds, spread strategically throughout the district. Staff routinely sample each chicken's blood to test for antibodies to mosquito-borne viruses. A positive result indicates when and where virus transmission occurred. Staff then respond with appropriate control measures. In 2020, 3 sentinel chickens were infected with WNV.

STATE-WIDE DISEASE SURVEILLANCE

West Nile virus data is collected and analyzed through a statewide database utilized by most mosquito districts and agencies which perform mosquito control.

WEST NILE VIRUS

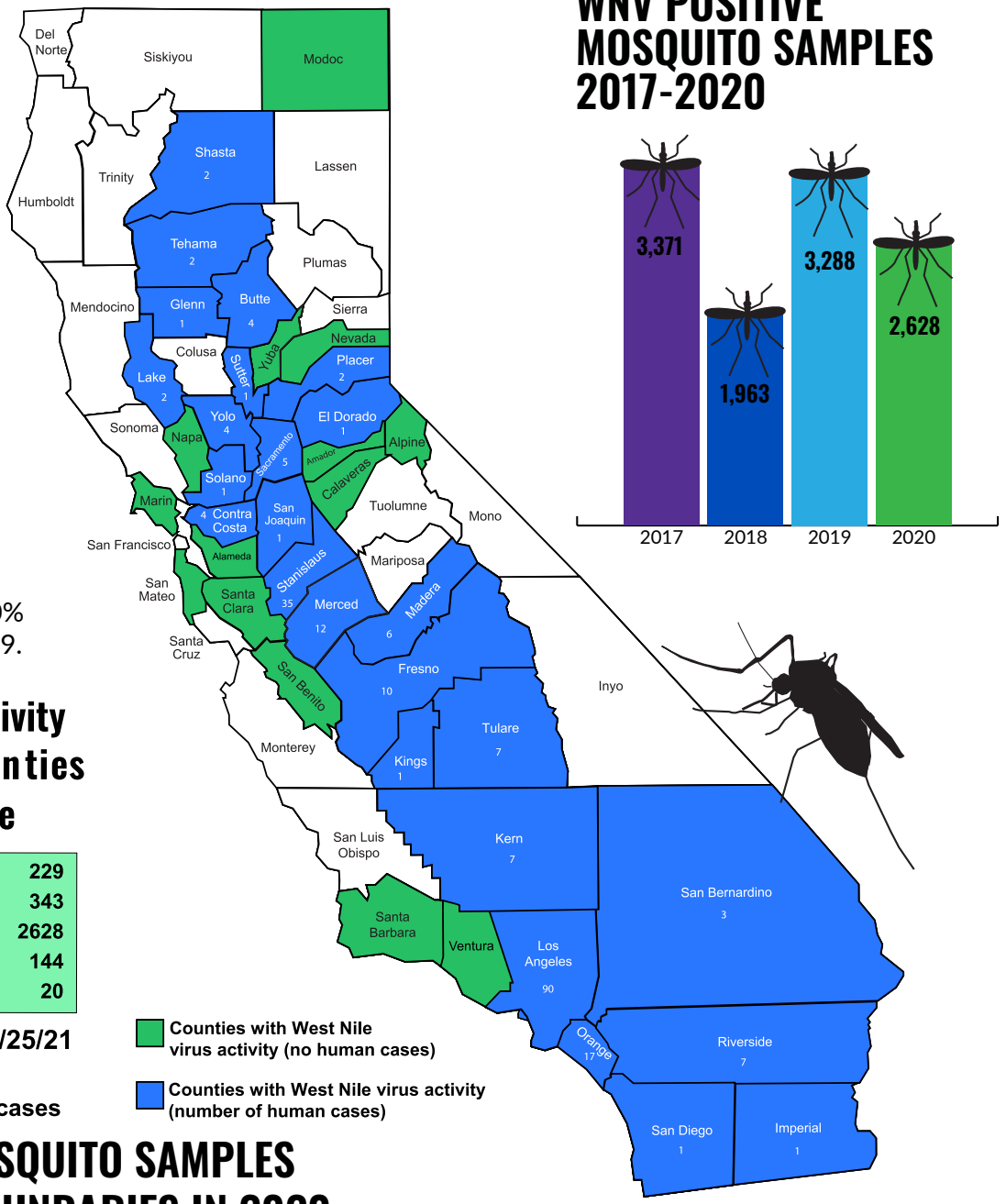
Human case numbers of WNV are virtually identical between 2020 and 2019 at 229 and 225 respectively. Positive WNV mosquito samples totaled 2,628, a 20% reduction compared to 2019.

West Nile Virus Activity in California Counties 2020 Year-to-date

Human cases	229
Dead birds	343
Mosquito samples	2628
Sentinel chickens	144
Horses	20

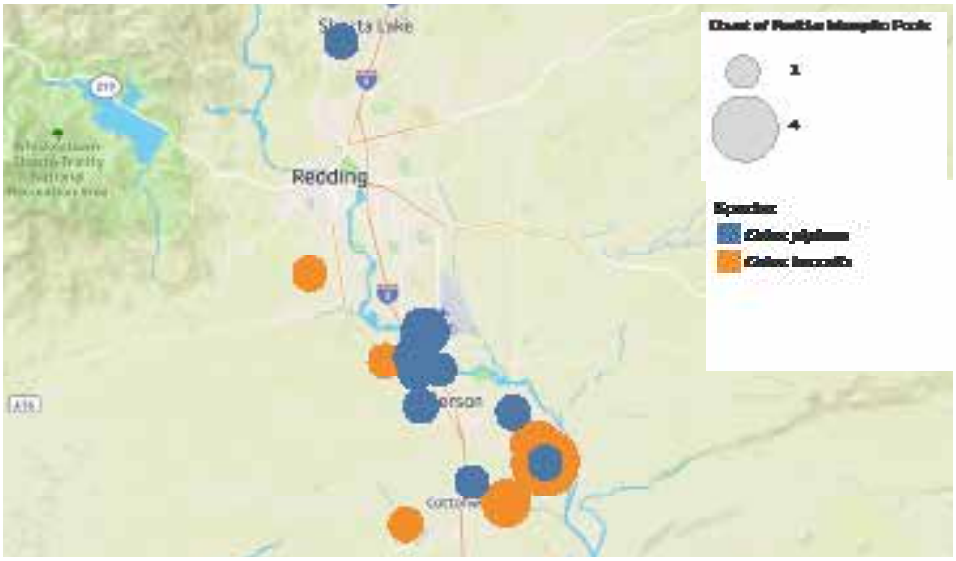
Updated 02/25/21

26 counties with human cases



WNV POSITIVE MOSQUITO SAMPLES 2017-2020

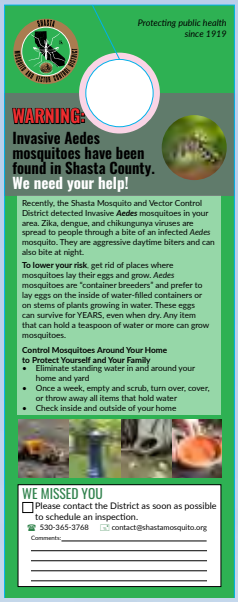
WNV POSITIVE MOSQUITO SAMPLES WITHIN SMVCD BOUNDARIES IN 2020



ST. LOUIS ENCEPHALITIS VIRUS

St. Louis encephalitis went undetected in California for several years before suddenly reemerging in 2015. Since its rediscovery, the virus has been detected in mosquitoes, sentinel chickens and very rarely causing illness in humans. The number of SLEV positive mosquito samples found in 2020 easily surpassed previous year totals while other indications of the virus remained comparable to prior years.

Doorhangers were left at residences during door-to-door outreach. The back of the doorhanger included a thorough checklist so residents were able to inspect their own yards for potential mosquito breeding habitat.


Protecting public health since 1919

WARNING:
Invasive Aedes mosquitoes have been found in Shasta County. We need your help!

Recently, the Shasta Mosquito and Vector Control District detected Invasive **Aedes** mosquitoes in your area. Zika, dengue, and chikungunya viruses are spread to people through a bite of an infected *Aedes* mosquito. They are aggressive daytime biters and can also bite at night.

To lower your risk, get rid of places where mosquitoes lay their eggs and grow. *Aedes* mosquitoes are "container breeders" and prefer to lay eggs on the inside of water-filled containers or on stems of plants growing in water. These eggs can survive for YEARS, even when dry. Any item that can hold a teaspoon of water or more can grow mosquitoes.

Control Mosquitoes Around Your Home to Protect Yourself and Your Family
- Eliminate standing water in and around your home and yard
- Once a week, empty and scrub, turn over, cover, or throw away all items that hold water
- Check inside and outside of your home

WE MISSED YOU
☐ Please contact the District as soon as possible to schedule an inspection.
☎ 530-365-3768 contact@shastamosquito.org
Comments:


Staff wearing masks for door-to-door outreach and source inspections.

CORONAVIRUS DISEASE

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. To say the spread of this disease impacted our operations and surveillance would be an understatement. As Covid began spreading in California, stay at home orders were issued and, as an essential public health service, we were forced to find innovative ways to maintain service and, at the same time, maintain the safety of our staff and the residents we serve. Measures included staggering changing times, remote meetings, remote trainings, remote interviews and facilitating remote work when available. In addition to implementing local measures, we met regularly with other mosquito districts, special districts, and other local government agencies to ensure consistency in response. Although in several instances we were forced to reprioritize our efforts, the core services of our agency were provided with little disruption.

Training meeting performed while socially distancing outdoors due to COVID-19 precautions.

OUTREACH & PUBLIC EDUCATION

Though many of our outreach avenues were restricted due to the pandemic, we pivoted our strategies in efforts to reach the public. We used multiple outlets, including: press releases, website updates, geotargeted Nextdoor notifications, social media, news coverage, local radio PSAs, and even door-to-door outreach. Additionally, we added new PSA campaigns on YouTube and Pandora, with our messages delivered to zipcodes within the District boundaries. We missed participating in the in-person community events and classroom presentations, and look forward to contributing to those again in the near future.

"If a mosquito becomes a squatter, you know your yard has too much water."

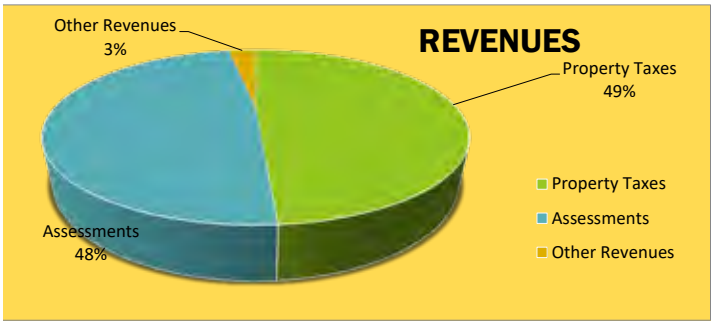
FINANCIAL REPORT

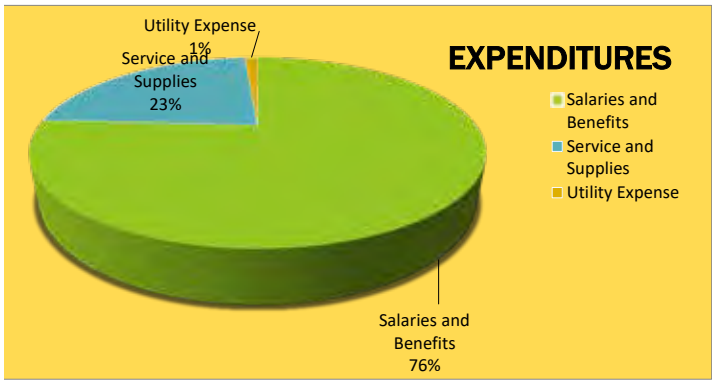
The Shasta Mosquito and Vector Control District depends on property tax revenues and benefit assessments to fund its operations. The District's objective is to be fiscally responsible in accordance with Generally Accepted Accounting Principles (GAAP), Governmental Accounting, Auditing and Financial Reporting (GAAFR) as well as State Controller reporting guidelines.

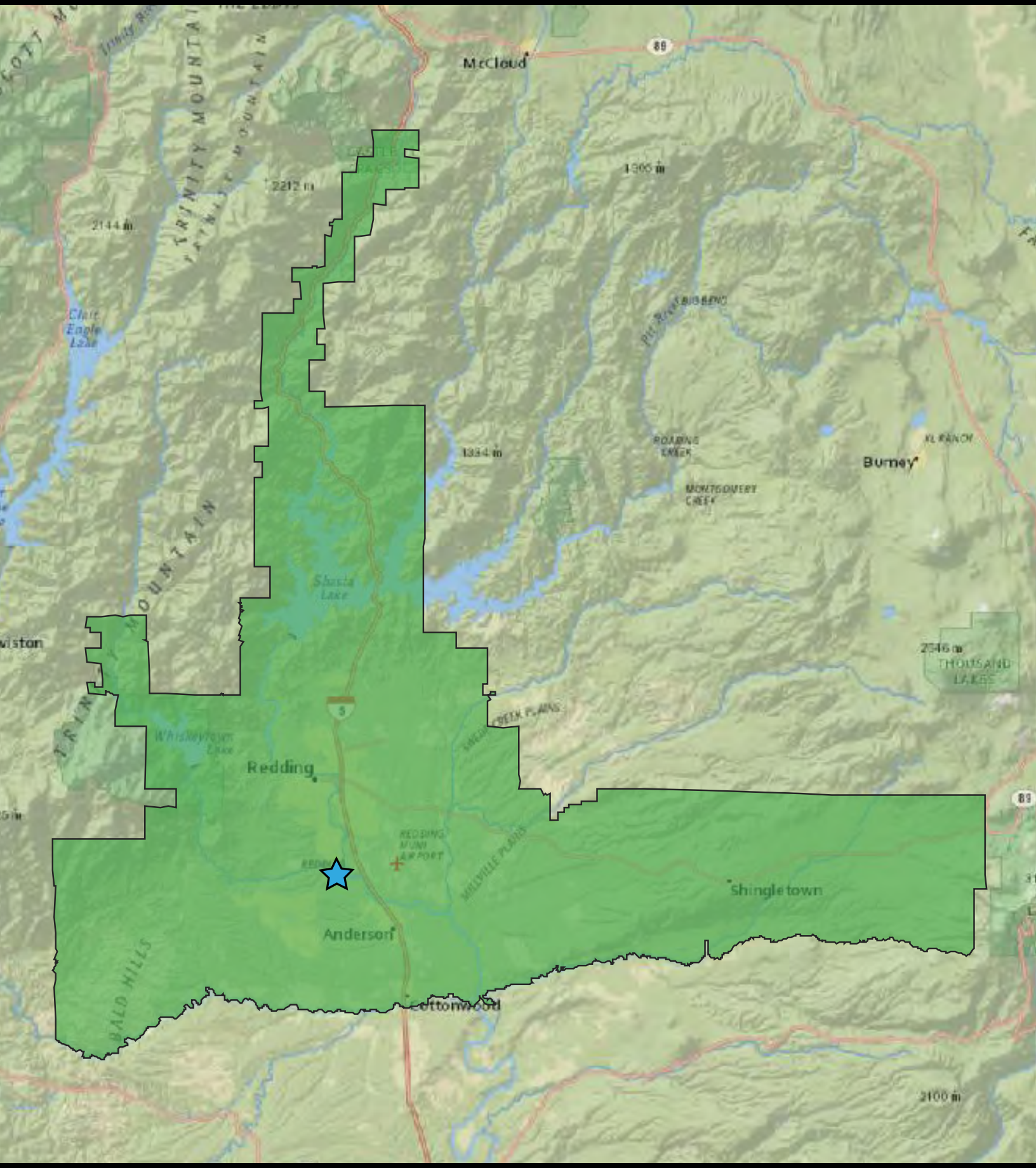
The District, despite shutdowns due to Covid-19, continues to run smoothly and independently from the county. We have remained fiscally conservative and continue to utilize a transparent approach. This year we had another successful filing of a clean annual audit. We are also transitioning to a cloud-based system to give the flexibility of working remotely, if needed, without impeding business practices.

Statement of Financial Position: FY 2019-2020 (June 30, 2020)	
Assets	
Cash and cash equivalents	3,205,643
Due from other governments	9,272
Inventories	74,785
Non-depreciable capital assets	51,273
Depreciable capital assets, net	1,078,197
TOTAL ASSETS	**4,419,170**
Liabilities	
Note payable	$164,938
Net pension liability	2,400,000
OPEB	297,067
Compensated Absences	**121,185**
TOTAL LIABILITIES	**2,983,190**

2019-2020 REVENUES		
Property Taxes	1,443,381	48.82%
Assessments	1,428,730	48.33%
Interest & Miscellaneous	84,267	2.85%
TOTAL REVENUE	**2,956,378**	**100%**
2019-2020 EXPENDITURES		
Salaries and Benefits	2,013,865	75.92%
Service and Supplies	606,644	22.87%
Utility Expense	32,261	1.22%
TOTAL EXPENDITURES	**2,652,770**	**100%**







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